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ABSTRACT

A collaborative Internet Web page design project broke disciplinary, college, and classroom boundaries when used to re-imagine teaching-thinking-learning possibilities to reconfigure education. The collaboration, named Tools for the Mind: Using Technology for Mindwork, involved teacher education students and university professors from the University of Detroit Mercy; teachers from an urban elementary school; and pupils. Action research stimulated an interdisciplinary systems approach to developing discourse communities for breaking boundaries created by restrictive mental models. Initial brainstorming across cultural boundaries led to articulation of purpose, audience, and content ideas for the Web page. Participants shared resources and ideas in order to complete the planning. Once the initial planning group designed the beginnings of the Web page, they opened it up to interaction by all of the school's teachers attending a summer workshop in technology. The project found that cultural perspectives were essential in developing discourse communities to break boundaries, utilize differences, and strengthen collaboration. Issues of equity of access to knowledge, learning, and technology need to be addressed within context in order for visionary-practical change to occur. Seven appendices present information on (1) the Four Cities Professional Development School Network; (2) Tools for the Mind: Supporting Mindwork with Technology; (3) Strategic Plan (K-16) for Tools for the Mind; (4) Hampton Web Site Plan; (5) Cool Sites for Teachers/Curriculum/Kids--Hampton Web Site; (6) Hampton Web Site; and (7) Summer Curriculum Technology Workshops. (Contains 52 references.) (SM)

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Breaking Boundaries

The experience of a team of educators who set out to explore how one aspect of technology -- Web page design -- could develop understanding of the teaching-thinking-learning dynamic which we call education.

Thinking About Learning and Schooling
Session
American Association of Colleges for Teacher Education
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whose belief in the power of small groups of people coming together to create leverage for change and whose support with both ideas and monies made it possible for us to be here with you today to probe lessons learned and challenges of the future

May each and all of us continue to accept the challenge
to use our imagination, to fuse moral and intellectual actions,
and to engage in a professional dialogue which gives meaning
to our efforts to break boundaries
and create new understandings of teaching-thinking-learning.

-- Joslen, Hugh, Chrystal, Geoffrey, and Cassandra

Abstract

A collaborative Internet project broke disciplinary, college and classroom boundaries when used to re-imagine teaching-thinking-learning possibilities to reconfigure education. Action research stimulated an interdisciplinary, systems approach to developing discourse communities for breaking boundaries created by restrictive mental models. This inquiry used operational frameworks based on interactive literacy theory and constructivist curriculum practices. Authentic assessment generated questions and insights useful in understanding how digital space, text and image interaction, transforms the way we think, communicate and create. Findings include two major challenges. Cultural perspectives play a major role in developing discourse communities to break boundaries, utilize differences and strengthen collaboration. Issues of equity of access to knowledge, learning and technology must be addressed within context for visionary-practical change to occur.

Breaking Boundaries

This paper relates the experience of a team of educators who set out to explore how one aspect of technology -- Web page design -- could develop understanding of the teaching-thinking-learning dynamic which we call education.

Key players in this exploration are teacher education students and university professors as well as school educators and students. Each of these players brought their own cultural perspectives developed through their experiences. Each perspective first is conveyed separately to develop a conceptual context of our individual ways of thinking and knowing. Then, we relate what we believe are significant aspects of our attempt to join these perspectives in our collaboration toward understanding the educative potential of Web page design.

We invite readers to temporarily enter our world as related here by a university teacher educator, a university English educator, a school educator, and two university teacher education students. We hope that your interaction with our story helps you to use the technology-teaching-thinking-learning dynamic to improve education.

"While you are with us,
You belong not to us
For your souls dwell in a
Place of tomorrow
Which we cannot visit,
Even in our dreams."
---Adapted from The Prophet, Kahlil Gibran

Teacher educators face many challenges for the future. And there are many lessons which have been learned. We realize that we are charged with preparing teacher education students for a future that we have never experienced. And they, in turn, are responsible for doing the same with their students. One way to use lessons learned to address challenges for the future is to identify boundaries which inhibit growth and break them.

At the University of Detroit Mercy, several such boundaries have been identified. These boundaries have been subject to critical examination. As a result, we realize that the ultimate growth-inhibiting boundary really is created by our own mental models of how we should work (Senge, 1990). Frequently, a simple question - why must this boundary exist? - is enough to generate the answer - It doesn't have to exist. And so, once freed from the constraints of the "way things are," we are free to cross the boundary and launch into the unknown.

Let there be no mistake. Our breaking of boundaries has not been simple. Once broken, we have not always proceeded with a freedom of movement. What has sustained our efforts is the challenge-support creative tension we find in our professional collaboration. This professional collaboration has occurred in many different configurations. It is our belief that by connecting and relating the

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outcomes of these different configurations of professional collaboration, we create the energy necessary to use imagination, to risk breaking boundaries, and to engage the challenges of the future for educators, schools, and society.

As societal institutions, schools - at the local level and at the university level - are affected by the cross-currents of beliefs, values, policies, and realities of society. There is no paucity of recommendations and programs for education and school improvement (Darling-Hammond, 1997; Glatthorn, 1995). The dilemma for practitioners - be they at the university or school level - is how to use these ideas and resources. The sheer number is overwhelming in itself.

For the purpose of seeing success, it is tempting to use selective vision to focus and measure only one aspect of schooling. Once achievement of this measure is documented, it is easy to create an illusion of improvement and systemic change. It is, however, equally impossible to claim success by scattering efforts across the array of variables affecting education within schools. When schools are viewed as systems within the larger societal system, it is possible to combine both the simplicity of focus and the complexity of multiple variables. In this scenario, a leverage point for action can be located and then utilized to change the system (Senge, 1994).

Learning how to use the technology of today as a tool for mindwork is such a leverage point. Certainly, technology is a pervasive influence in society. Historically, technology inventions have been considered as breaking boundaries to advance society. They have also created boundaries. There are the inventors and the users; there are the users and the non-users; there are the ardent advocates and the equally ardent skeptics; there are those who have know-how and those who lack the know-how (Gates, 1995; Postman, 1993). The central issue for educators is how to engage the challenge of technology in a manner which resists simplistic solutions and explores its potential for understanding the teaching-thinking-learning dynamic of education.

To use this leverage point, it was helpful to identify and address assumptions and beliefs which would be barriers to collaboration if left unattended. Key players in this exploration were teacher education students and university professors, as well as school educators and students. These players were originally confined within their own distinct cultural boundaries. At the University, a major boundary between Colleges - in this case, Liberal Arts and Education - is marked by a central conflict. Liberal Arts views Education as having no "content" but only offering an empty sort of "process." Education, on the other hand, perceives Liberal Arts acting as though only "content" matters with no need to understand the pedagogical knowledge, skills, and expertise required for effective teaching and learning. There is a second major boundary augmented by a natural geographic separation between the culture of the university and that of schools. Universities see their role as preparing teacher educators with a sound foundation of "best practices" based on theory and research. These practices, if used faithfully, will improve teaching and learning in schools. Schools, on the other hand, view university teacher preparation as theory without the reality base needed to apply "best practices" within the context of daily school life. Crossing these cultural lines requires the building of relationships based on trust. As such, individuals do not set out to persuade or dissuade. They must believe that their ideas are valued and that they are not some "thing" to be fixed. The major emphasis

must be on dialogue and inquiry around common concerns (Four Cities, 1998).

It was not difficult to find a common concern. Each of us in our own cultural pattern was attempting to figure out how to use new electronic technology innovations to help us learn. At first, we did not realize how we shared this concern. We needed to look beyond our cultural behaviors and talk across cultural boundaries. We told our stories and listened to each other's stories. We sought to understand one another's language and experience. We discovered that each of us, while using our strengths, had missing pieces to the puzzle. In order to fully utilize the leverage point of new electronic technologies for improving teaching-learning, we needed to break our self-imposed boundaries and begin to collaborate in new ways. We became cartographers for each other as we conveyed our explanations of our ways of thinking and doing. Using our own perspectives, we came together to map the terrain and chart our course for inquiry.

We shared a sense that society was threatened by a new boundary, a boundary between electronically literate elites and those excluded from such technology. Exclusions might be based on simple technological ignorance or based on current inequities of access. Whatever the basis, as educators whose mission extends into larger communities, it was our responsibility to teach technological skills so that our students - and the communities that they in turn create - would be active participants in this newly dominant culture.

Teacher Educator Perspective

Teacher education at the University of Detroit Mercy uses a curriculum conceptual framework of Teacher as Scholar, Teacher as Continuous Inquirer, and Teacher as Moral Agent. My own experience in using this framework revolves around the necessity to address the multiple decisions a teacher must make to plan, prepare, implement, and evaluate the teaching-thinking-learning dynamic of education. These decisions require an interaction among subject matter inquiry, students' personal purposes, and students' prior knowledge and dispositions.

The multiple decisions teachers are required to make are best understood by linking three foundational theoretical concepts of constructivist teaching. These are pragmatic intelligence (Dewey, 1910/1933), action research (Lewin, 1948), and experiential learning (Kolb, 1984). All three of these concepts are used in a continuous decision making cycle analogous to surfing (Sergiovanni & Starratt, 1993). This cycle, like surfing, requires reflection, critical reasoning, and critical engagement to occur so rapidly that they appear as simultaneous operations. Riding the curl of the wave of subject matter inquiry certainly requires knowledge of the discipline content and students. It also requires the decision making skills necessary to make the moves which use the energy and momentum of teaching to capture the curriculum outcomes for learning.

In my teacher education classes, students get the opportunity to tease out one or the other of these decisions but never so far as to remove it from the context needed to develop an understanding of its potential to impact student learning. Access to a broad pedagogical knowledge and skill base provides theoretical and practical research findings for choosing effective teaching strategies. Here

I see a relationship to the dialectical thinking using differing perspectives usually associated only with the Liberal Arts.

Teacher education students at the University of Detroit Mercy integrate a normative point of view into the curriculum conceptual framework through a student-developed Teacher Education Student Professional Code of Ethics. This code addresses ethical behaviors for professional competency with the three audiences of school-based practice--students, parents, and school system. Constructivist teaching theory once again provides a base for understanding our normative code through what Henderson (1996) calls a 4C approach. Teaching is a Calling (Bogue, 1991) and is Caring (Noddings, 1984), Creative (Eisner, 1994) and Centered or authentic (Greene, 1998).

Teachers who use constructive practices scaffold instruction in what is termed metacognitive guidance for learning (Palincsar, 1986). They engage students as active participants and conscious agents in problem solving, inquiry, and authentic forms of assessment (Brooks & Brooks, 1993). Knowledge, skills, and attitudes are learned by using cultural referents to empower students intellectually, socially, emotionally, and politically (Ladson-Billings, 1994). Traditionally, curriculum resources, such as electronic technology, were viewed as tools for extending learning possibilities. Within constructivist teaching and learning environments, we now view the role of technology as not only extending but constructing learning possibilities which empower students.

Teacher educators do not need to be convinced that electronic technology is a dominant presence in their lives and the lives of their students. How best to prepare teacher education students to use these rapidly developing technologies is the challenge. Part of our challenge is, of course, the acquisition and allocation of financial resources for the purchase of equipment and materials. One major consideration is the fact that effective teaching does not always require the use of electronic technologies. Teacher education students are not viewed as having the same need, for example, as engineer or dental students who are considered unable to work if electronic devices are not constantly available. Depending on the place of future employment, teacher education students may find themselves with state-of-the-art technology available or next to nothing, or anywhere along that continuum. University financial resources, particularly at smaller ones such as the University of Detroit Mercy, are stretched to the limit with multiple priorities. Funding agencies are restrictive in the amount of grant monies available for acquiring electronic technologies. Rapid development of electronic technologies makes present equipment obsolete almost before it is mastered. Universities are not as able to write off capital expenditures as corporations can. Nor can we float bond offerings to fund capital initiatives as public school districts can. Arrangements such as leasing instead of buying equipment have been some help. All of the above forces us to be creative, choose wisely, and address this challenge by determining what is the critical mass of electronic technologies necessary to fulfill our moral commitment to prepare teacher education students. This is a continual challenge and one which we are still attempting to address. Once electronic technologies are available, it is possible to use them to engage in critical inquiry issues central to teaching-learning strategies.

Two major areas for inquiry revolve around the issues. One area is basic technical skill competence and the other concerns ways of thinking and knowing. Within the Education Department at the

University of Detroit Mercy, we have engaged inquiry in both areas. Our students arrive with a wide technical range of mechanical skill levels. Since the majority of our teacher education students teach in urban areas, they will have students with a similar wide range. Questions of when, where, and how mechanical skills are best learned swirl around this issue. They are rudimentary questions but they resemble questions commonly raised about the place of basic skills such as phonics, computing, and grammar across the curriculum. Use of electronic technologies for critical thinking and problem solving also involves questions of how, when, where to use software designed for this purpose. These programs involve students in making choices which alter outcomes, build models, test systems, and the like (Senge, 1994). Often, elementary and secondary curriculum materials come with laser discs, videos, transparencies, audio tapes, etc. already formulated for classroom use. These technologies present combinations of visual and auditory images and words with the purpose of improving learning. Our modes of inquiry in this case frequently revolve around how best to build the theoretical and research base of conceptual understandings which will enable teacher education students to use these resources to achieve learning within the curriculum.

Our job is further complicated by the realization that our classes are basically a lab situation. In essence, we can stop the world and focus on specific skills, reflect on real and imagined outcomes, and think about designs for using the results of this luxury of space and time. But is this really a luxury? In our Education Department, we believe it is a necessity for practitioners to reflect on their actions. We are also aware that reflective practitioners do so while acting (Schön, 1987). For this reason, we have spent the last four years breaking the boundary between University and School. This effort has resulted in a partnership arrangement with Hampton Elementary School in Detroit. Together we have worked hard to establish a relationship which challenges and supports both parties to break out of their normal cultural thinking habits and engage in dialogue and mutual inquiry. These efforts have been supported and engaged by the participants through the Four Cities Professional Development School Network (funded by the Joyce Foundation) (See Appendix I). As a work in progress, the Hampton Elementary School-University of Detroit Mercy partnership involves being proactive professionals and seeking to embrace the moral challenges of the teaching profession in the daily life of practice (Letscher & Tibbs, 1997).

Additional funding help from the Joyce Foundation enabled both partners to formulate a proposal for using technology for mindwork (See Appendix II). The implementation of this proposal has allowed us to build an awareness of the potential of technology to positively impact learning. This potential has become acutely focused in our inquiry around the use of the Internet. At first, we regarded the Internet as a great resource only for locating information, sending e-mail, and the like. While this use is certainly helpful, it soon became apparent that there were angles which needed to be explored if we were to exploit the potential of the Internet as a tool for mindwork. It was at this juncture of our inquiry that collaborative efforts with the English Department began to happen. Another "cultural" boundary needed to break.

English Department Perspective

This session concerns "boundaries": boundaries between disciplines, between various colleges that supposedly constrain those disciplines, between teachers and learners, and between the conceptual models that shape teaching. These Balkanized worlds seldom call a truce, in part because the source of their division is nearly invisible, a division that lies in language itself, in the tendency of language to "naturalize" the stories through which we construct our various realities. Where do we find conceptual tools for crossing these boundaries, for erasing destructive boundaries and sustaining useful ones? How do we make visible the conceptual maps that control our behavior? My own experience is that literary theory offers a powerful framework for re-conceptualizing the map of teacher education, and I would like to briefly explain how the Liberal Arts Web site at UDM exposed conceptual and pedagogical assumptions when its design and implementation arose from theoretical concerns about the nature of knowledge, particularly whether "reality" and "value" were something "out there" that was to be discovered, or whether "reality" emerges from the array of practices - artistic, linguistic, scientific, social, etc. - that characterize a culture. Firmly anti-transcendent, our site has turned to the epistemology of postmodern theory to guide our work.

The students drawn to this project have not been part of a class. Loosely referred to as "The Design Group," their work began in opposition to the College and the Computer Center. The liberal arts Web site could emerge only by defying the institution it sought to serve. All the students are remarkably bright, and most have been interdisciplinary in their interests: an English major with three years education in Engineering, a dual major in mathematics and English, a Liberal Studies major with emphases in mathematics and writing, an English-Education major, and an English major with plans to attend a Human Computer Interactions (HCI) graduate program. One student was on academic probation; the others varied widely in standard indicators of academic "achievement." Their participation hinged on a number of factors we can discuss at the end of this session, but all find traditional pedagogical modes inefficient and unsuited to critical learning.

Their talent, the complex needs of the project, and their diverse types of intelligence dictated a "classroom" whose goal was to produce an object, i.e., a Web site. Only a collaborative, non-hierarchical organization could succeed in this goal. Everyone has had to depend on the expertise of others, and to move freely between the construction of the site and the various critiques of its ideology. This process led to two grants, each dedicated to extending the pedagogical/conceptual model to other disciplines. The experience has been codified in a new course that institutionalizes the process. Our model and our experience have begun to cross another boundary as we work with the school of education. That department needs our technical resources, and we are eager to re-address ideology by constructing a site in collaboration with an elementary school. This site, we expect, will continue to be tightly constrained by the cultural forces that shape the education of children and to thus offer a glimpse at an ideology fundamentally opposed to that which guides our own work.

What is the role of literary theory in this project? Literary theory offers tools for dis-covering the common geography upon which education and liberal arts have inscribed our frontiers. It provides analogies useful for today's task. The basic analogy is between what we call the reader and what

educators term the learner or student. Each discipline can benefit by habitually substituting one for the other. The experience of the UDM Design Group began in literary theory, particularly the work of W. J. T. Mitchell (1981), and the usual cartographers of postmodernity (Foucault, 1972; Lyotard, 1984; and Iser, 1974) who have made boundaries themselves, the subject of literary study. Often we call these boundaries "master narratives" or simply narratives. But our essential focus is on two aspects of language: first, its failure to adequately describe "reality," and second, the construction of reality by these narratives as they provide socially approved modes of discourse. We begin with the assumption that readers simultaneously create and are-created-by the cultural narratives. And in this I hear an analogical echo to educational terms such as "constructivism," "learning-by-doing," etc.

When the Design Group began its work, the goal was simple: create a Web site for the Liberal Arts College that requires tourists to actively participate, i.e., to add to it. The site was to be interactive, to establish "communities of discourse" and to place a high value on graphic design. For example, it has a "Query" function which allows anyone to post a topic for discussion and the entire thread of responses and counter-responses is preserved online. Topics include everything from "Raspberry Danish," an ongoing set of poetic parodies, to discussions about interdisciplinary study, information theory, and relations between mathematics and literature. It offers direct contact with the Liberal Arts Co-op Office, and a number of e-mail links to professors and program directors. The site was to be student-made, student-run, and collaborative. Our conceptual mantra was something on the order of "order without hierarchy." The design principles emphasize the active role of students in two areas: first, in the actual creation of the Web site, and second, in the activity of those who use the site. Behind these intentions lay, first of all, the pragmatic skill of a generous professional design group led by Patrick Parsons who has an intense interest in Web sites as the performance of a "concept." Parson's phraseology is a fortuitous echo of Sedgewick's (Parker & Sedgewick, 1963) work on performativity, work that arises from earlier theorists such as Austin (1975). We are also fortunate to draw upon other academics whose scholarship regarding assessment recognizes divergent categories of thinking in highly statistical ways. Thus a wide range of philosophical, commercial, and design communities collaborated to experiment with electronic technology. Everyone involved recognizes that Web sites offer a cultural site where traditional boundaries can be contested. Readings in theorists form an immense part of this voluntary project, a project that finds students clamoring to join the Design Group, perhaps in the hope of learning outside the conventional modes of education. An articulate disdain for conventional teaching pervades our work. Any verbs that suggest a teacher "transmits" information to a learner are overtly ridiculed. Equally ridiculed - and these students articulate their ideology through parody and argument - are students who expect to be told what to do. The identification of a complex performative task constitutes a fundamental value. Boundaries are contested and manipulated to produce dis-equilibriums, and these dis-equilibriums require activity on the learner's part.

The most obvious of these contestable boundaries is that between text and image, and our discussion/work is heavily influenced by W. J. T. Mitchell's (1986) conceptions of image-vs.-text as a fundamental binary of Western culture. Mitchell traces a history of this binary and its influence in the west. Contemporary theorists of hypertextuality such as Landow, 1992, Coover, 1998, Murray, 1957, examine how more complex forms of textuality go beyond the rigid distinctions of image and

word. All recognize that cognition is complex and that multi-media genre offer more complex forms of readership. These are opportunities to exercise cognitive styles that lie dormant when we are restricted to print. If image-text is a faulty dilemma, electronic media - particularly Web sites - offer an effective place to contest the binary, for such media require a multitude of cognitive styles: verbal, linear, graphic, mathematical, and whatever else. Our assumption is that a diverse group of students with diverse cognitive styles will sort themselves into tasks that called upon their peculiar talents, and that whatever is made can then be analyzed to expose its underlying narrative (Tufte, 1997). Our analyses tend toward the semiotic and emphasize sites as what Barthes (1972) would call "signs."

The final literary-theory influence on our project has been the pervasive recognition of texts as dependent on readers. No text exists apart from its instantiation by readers. The role of readers in texts has been a keen interest of the discipline since the end of World War II, and cuts across a number of schools: psychoanalytic, phenomenological, New Historical etc. No critic can avoid recognizing the role of readers in constructing what we would like to believe is a stable text. In short, any "essentialist" notions of boundaries are understood as relics of a discredited past; the culture is thoroughly constructivist in its ideology, and our project depends on the construction of objects that are then examined for the ideas and assumptions necessary to their creation. Collaboration with the school of education offers the Design Group an opportunity to create an object whose ideology may be at odds with their/our own. In the examination of the site's cultural contexts, its need to transmit information, and to serve hierarchical modes of thought, the place of ideology itself will become clearer.

School Educator Perspective

The winds of educational change are blowing. They can be felt in the crowded hallways of public schools, university colleges of education, teacher unions, Local School Community Organization meetings, in the state and national political arenas. Why? Because the problem of change is "bigger than the school" and this is why alliances and partnerships are essential if public education is to survive. What are urban schools facing as they strive to formulate new goals for children in a learning society?

A startling picture of the problem in the United States demands our attention. Too many of our preschool children are destined for school failure because of poverty, neglect, sickness, handicapping conditions, and lack of adult nurturance. Almost one quarter of our children (birth to age 5) live in poverty. The vast majority of America's one million prisoners are high school dropouts.

These real world problems demand a climate of collaboration. It takes a learning community of teachers, parents, students, unions, universities, business, community agencies, and legislators having meaningful dialogue on their collective visions of how to bring about research driven reform, to successfully take our children to the year 2000 and beyond.

If we are to continue to expand educational opportunities to more children while adhering to high academic expectations, we must stop attacking the schools and put all our energies into creating a

system which works. We can build anew!

Hampton Elementary School, an urban public school of approximately 800 students preschool through grade 6, has formed a professional development school partnership with the University of Detroit Mercy and the Four Cities Professional Development Network. I believe they are true partnerships for change.

We recognized that all children are influenced by electronic technology; you only have to look to the recent giga pet craze. So, when an opportunity to collaborate in the design and implementation of Tools for the Mind: Using Technology for Mindwork presented itself, it was a natural outgrowth of our partnership.

As our involvement with Tools for the Mind grew, we increasingly made sure that the electronic supplemental resources were purchased as curriculum materials. These resources included the usual low-tech items, such as overhead transparency equipment, audio tape recorders, but also expanded to include CD ROMs, laser scanners, and digital cameras.

It has also made us face the biggest stumbling block to increased technology usage, the limitations of our school's physical plant, its electronic outlets, writing system, school layout, and security issues.

Another area of inquiry has been the realization that many of our students have utilized technology as passive participants. TV and even video games do not require students to read, write, or create an idea. Their previous experience with film, filmstrips, and videos were mostly in a format of presenting information. People haven't been asked to read while watching pictures since silent movies and our students' parents wouldn't remember them!

Another area of inquiry has centered around our students' needs to make the connection between the basic learning skills of reading, writing, and mathematics and real world problem solving and critical thinking.

This then leads to questions of place, format, and function in teaching basic reading, math, and grammar. How can teachers teach so that students achieve mastery of language and math which will be required for them to have productive careers and be good citizens?

For us, excellent teachers are the key and a college of education preparing teachers for the field and offering the professional development and technological resources necessary to produce outstanding urban educators is assisting us in answering that important question.

All urban schools struggle to fulfill legislative mandates, especially those focused on the special needs of children, physical, intellectual, and health requirements along with standardized tests used to measure the success of students, teachers, school systems, and administrators. Financial resources are strained by such far reaching demands often without accompanying funding.

The timing of the Tools for the Mind Project seemed right for us! We never seemed to question if traditional boundaries should be broken. If the University of Detroit Mercy was willing to crossover, we were willing to do likewise, taking students, parents, and staff along for the journey down the information highway using technology for our high powered fuel. We have a good map, know our destination, and are enjoying the ride.

University Student Perspective

"...I shall be telling this with a sigh
Somewhere ages and ages hence;
Two roads diverged in a wood, and I--
I took the one less traveled by,
And that has made all the difference."
---Robert Frost

In *The Road Not Taken*, Robert Frost poeticizes the dilemma of making decisions. Educators find themselves experiencing similar dilemmas when faced with the varied means for educating students placed before them. There are many routes--many roads--followed by teachers responsible for educating students. The choice of which roads to take, seems just as problematic as Frost's version above. In the search for methods of providing quality and meaningful education, there are many roads "less traveled". They are the roads of collaboration, the roads of integration of technology into classroom learning, the roads of interdisciplinary cooperation, and the roads of providing access--if not equity--for urban learning. Unfortunately, these are the roads least commonly traversed. Significantly, these "roads less traveled" converge in education at the point where boundaries are broken. They break down the traditional boundaries in education which emphasize hierarchical learning, ignore interdisciplinary collaboration, negate diverse ways of learning, and disregard outside resources which supplement the available teaching materials. However, for those who have chosen to take those roads, it has "made all the difference," both in their perception of their roles as educators and scholars, and in the education of the students they teach.

However, choosing those roads takes courage. From where does that courage come? As a student at the University of Detroit Mercy, double majoring in Secondary Education and English, that is a question which I am compelled to examine. The impetus for that examination was the recent collaborative project between the English and Education Departments of the University of Detroit Mercy and Hampton Elementary School. The project of making a Web site for Hampton, highlighted many areas where boundaries were broken, and the benefits that can be had because of that. As an Education student, this project takes on particular significance, as it has caused my attention to be focused on ways that non-traditional learning methods can enhance learning. That knowledge is important because it shapes the way that I approach education. That knowledge helps me to determine how to use outside resources in the learning process of the students whom I will teach. The project has been vital in helping me appreciate the types of boundaries to student learning which exist and the importance of examining why they do, and if they should. It has allowed for a deeper understanding of the role technology can play in education. More importantly, it has had an

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empowering effect on me as a future educator, as I build determination to not allow the traditional educational boundaries to "box in" my ability to teach.

Coming into the project toward the end of the completion of it, allowed me to look at the project objectively--to step back and see the complete picture. Doing that enabled me to see the problems which existed, and the benefits which were gleaned. Important also, was the realization of the types of boundaries which were broken in the process. As a graduate from an urban high school, I understand the problems of financing and lack-of-resources which plague urban and economically disadvantaged school systems. When speaking in terms of integrating technology and access to non-traditional resources into learning methods, that can prove a nearly impossible task with only the materials provided by the school district. A formidable boundary indeed! But, the Hampton project signified that a school need not be chained to the resources of their own buildings or school systems. Hampton's Web site was constructed in the English Department's Writing Design Lab by English and Teacher-Education students. In effect, they used the resources of an outside institution to produce something which can serve as a constructive part of their children's learning process. As an Education student, this has an effect on the way I view the "availability" of resources. It is proof that educators need to be ingenious about the sources of tools for student learning. It is an active process--not the passive one of accepting whatever is immediately available.

A second boundary broken by the Hampton project, was that of hierarchical learning, and the constraints which it puts on student learning and opportunities. In the classroom where I do field research, many of the students lack the basic skills which would allow them to grasp the more complicated concepts of English and Literature. Hierarchical learning methods would suggest that they will not learn the new concepts until they have first acquired the basic ones. To some extent that is true. However it is not always the case. Some educators may feel it futile to expose their students to complicated forms of technology, assuming they "will not get it". The Hampton project was one which defied that notion, as some of the Hampton teachers and students who had limited knowledge about the Internet, or even computers, began to grasp concepts about Web pages and design. Hierarchical learning methods would have suggested that this would not be possible. Thinking critically about that, I realize that teaching takes discernment--that is, being able to know what types of teaching methods are best for specific types of learning, and for specific types of students.

Regarding teaching methods, certainly the global connectedness of our society calls for different methods than have been used in the past. Especially is this true as technology seems to characterize our modern society. With that global connectedness, comes the need for education to be unselfish--that is, that educators should be open to collaboration and sharing. This is not always the case in the classrooms of schools at any level. The Hampton project was significant for me as a dual major (Education & English), as I watched as two colleges who have little in common regarding what they teach and the way they teach it, cooperated with each other for the educational benefit of the students, the teachers, and the administrators who worked on it. The two colleges did not always understand each other, and were sometimes down-right ignorant of the methodology of the other. But collaboration on the Hampton project showed that such conflict produces extraordinary results, and should be embraced--not resisted--by educators. As a member of both colleges, my experience

watching that was unique, as it underscored the emphasis of my ability as a future teacher to search for ways in which I can make use of other disciplines to the educational benefit of my students.

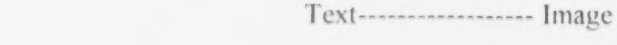
Just as it had been for Robert Frost, taking the road less traveled by proved to be the best one for the University of Detroit Mercy and Hampton Elementary School. The project traversed new ground, breaking many boundaries along the way. Collaboration, integrating technology into the classroom, hierarchical learning--all these concepts came to be revised by the Hampton project. For myself, it revealed the boundaries which prevail in education, and showed effective ways to hurdle them. As it was not the project of any one educational faction, the Web site was a product of the initiative and expertise of a group of educators--the product of the vision which they pursued despite the impediments before them. The project came to signify the questioning of boundaries, and the breaking of needless ones; broken boundaries which resulted in changing the way such boundaries are viewed. As a student involved in that process, traveling that road with the educators from the University and Hampton, has served as an impetus for myself to break down boundaries and use constructive and creative means for learning. This project followed the roads "less traveled by, and that has made all the difference."

Perspectives Joined

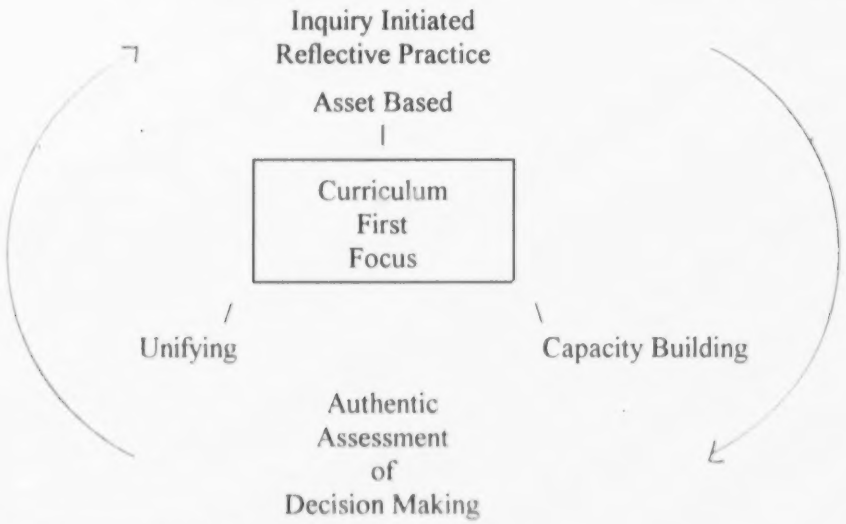
As we think about our professional collaboration, we know that we set out to bring our different perspectives to bear on the challenge of the technology-teaching-thinking-learning dynamic. However rigid the boundaries are around and between us, they are vulnerable to a common necessity which we share: the necessity to adapt electronic technologies. We chose the technologies underlying designing information for the Internet as the leverage point to be as explored for changing our thinking about the technology-thinking-teaching-learning dynamic.

Our design team was chosen by using the principle followed in building the Hampton Elementary School-Education Department partnership and continued in the design of Tools for the Mind. We would build on strengths. First, we looked for people who already had broken the cultural boundaries of inter-college and university-school. At the same time, these individuals needed to bring a set of skills which would develop two operational frameworks we believed were crucial to the technology-teaching-thinking-learning dynamic.

These operational frameworks were the writing to learn across disciplines framework and the curriculum first framework. The first framework is based on the National Council of Teachers of English ideas for better thinking and learning through writing. The English Department student design team along with Professor Hugh Culik had begun to play with these ideas to exploit the potentials of Web page design and implementation as a writing strategy to stimulate reader interaction. Thus, the operational framework was developed and used as follows:



The second framework is based on the design model from Tools for the Mind. This model seeks to utilize the dynamic environment of urban K-16 schools to build capacity of participants to use a curriculum-first focus. It engages two strategies: inquiry-based reflective practice and continuous, authentic assessment of the decision-making within a curriculum-first approach. These strategies use a curriculum-first focus which is asset-based, unifying, and capacity building. The Tools for the Mind Implementation Team - Chrystal Tibbs, Margaret Earle, Theresa Hampton, and Michelle Williams from Hampton Elementary School, and Elizabeth Carlson, Nancy Gibney, Jerry Goldberg, and Joslen Letscher from the Education Department had begun to work with this model It was used as follows:



(See Appendix III for operational definitions).

Joslen Letscher and Hugh Culik generated the original idea to integrate the two operational frameworks using an inquiry-based approach. Nina Jett, an English major/Teacher Education student, contributed her skills and experience from the Liberal Arts student design team. Cassandra Phillips, a graduate student, brought her knowledge of curriculum and her experience as a participant in Tools for the Mind activities. Chrystal Tibbs, Margaret Earle, and Theresa Hampton provided their ideas and perspective as school-based educators with experience in university-school collaboration, classroom teaching, and technology skills.

As inquiry developed, the two operational frameworks provided a supportive structure to explore the technology-teaching-thinking-learning dynamic. Not only did we design a Web site but we also generated new questions. These questions reflect both our lessons learned and challenges for the future.

Lessons-Questions-Challenges

Initial steps into our inquiry saw us carrying our cultural perspectives into the Web site design process. Key aspects of Web design (Trust, 1996) such as making your site look different yet making

users feel as if they just entered a cohesive world were paramount in Nina's approach. She wanted to use colors as clues; identify key elements with 3-D buttons and use of shadow; ease navigation from one site to another; use pictorial elements to give clues to what's important on the page; keep it simple and neat; and, most of all, make it interactive and kid-oriented to get students, her audience, involved. Cassandra's perspective started with searches for Web sites which could link to the Language Arts curriculum themes which Hampton Elementary School was using. She was interested in Web sites which would open doors for seeing exciting links to the world of the unknown for student learning within the curriculum. Chrystal, Margaret, and Theresa stimulated inquiry to integrate technology into activities which addressed student learning across the entire curriculum. School initiatives such as parent involvement and service learning were important. Practical matters such as site maintenance and student involvement in development were also part of their inquiry. Hugh and Joslen approached the inquiry from the perspective of keeping the integration of frameworks focused on the technology-teaching-thinking-learning dynamic. We moved freely across the geographic boundary of university-school. Sometimes we worked at the university, sometimes at the school. Breaking the boundary of our own thought processes proved not to be as fluid. We learned that it was helpful to have team members who were not involved in the actual design activities. In our case, Joslen and Hugh were able to ask questions and insert ideas to jump start the connections between technology-teaching-thinking-learning. In some instances, the questions were as simple as "How can you use this technique or Web link to focus student attention on the intended curriculum outcome?" or "Why did you choose this particular design characteristic?" School educators, on our team, presented their reality-based challenges. Some examples were involving parents, making homework assignments available, recognizing student achievement, and imagining ways to organize the data available on the Internet to be useful in their lesson planning. We learned that using each other's ideas across cultural boundaries helped us to keep the focus on the integration of our multiple realities.

Our initial brainstorming across cultural boundaries led to articulation of a purpose, audience, and content ideas (Appendix IV). Inquiry shifted to questions concerning how best to make the Web site interactive. We wanted to break the boundary of the mental model which holds that teaching-learning resources should be structured so that teachers and students can just pick them up and use them. Not only did we want to design a Web site so that students could interact with it; we also wanted to have a design which would invite teachers and students to continue creating it. So, we decided to look for ideas which could be used as examples by teachers and students. These examples then could jump start their imagination to create their own learning resource. Because we were reality-based, we knew that teachers appreciate not having to recreate the wheel which already exists. Students' learning is meaningful to them when they can relate new knowledge and skills to their own experience. In light of this knowledge, we asked ourselves the question, "Where can we find Web sites which are school-based, as well as teacher and kid focused?" Our search of current resources gave us some starter places. We evaluated these sites by using criteria similar to that for evaluating print media. Questions like "Who put up the site?"; "Why?"; When was it last updated?"; "How can I use several search engines?"; "What paper sources can complement available electronic sources?" gave us a start in evaluation (Knowlton, 1997). We added our audience and purpose criteria. We looked for both specific content sites and resource lists which teachers, particularly those unfamiliar with different

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types of Web sites, might find useful as spring boards to quality links to learning. Our initial listing is in Appendix V. Perhaps our biggest challenge was to keep the tension between the exhilaration of creating a design which allows fast movement through digital space and the need for an audience to create meaning while engaging certain curriculum themework toward outcomes for learning. We wanted to do both. In order to do so, we had to keep communication open and continuous throughout the design process. The Web site took on the look of a skeletal framework with some links "fleshed out" a bit to show future possibilities. Sometimes student work served to develop a curriculum theme. Other times links were made directly to existing Web site content. The Web site took a definite form (Appendix VI).

Once we had the beginnings of our Web site, we opened it up to interaction by all Hampton Elementary teachers at the Summer Curriculum and Technology Workshop. Nina and Cassandra were instrumental in breaking this boundary. Small group "hands-on" sessions were planned to allow teachers to "play with" the Hampton Elementary Web site (See Appendix VII). These sessions were deliberately held at the Liberal Arts Design Lab and kept informal. Nina and Cassandra inserted an introduction to key elements of their design. Then, the Hampton Elementary teachers were invited to begin their own Web page. They used photos of themselves and composed a brief paragraph using such ideas as their interests, professional achievements, etc. to introduce themselves. Members of the university student design team were on hand to assist the teachers in the technical aspects. Nina and Cassandra were energized. They saw their work stimulate involvement in the teachers even in those who first were hesitant to get involved. The looks on the faces of the teachers and the excitement in their voices were their indicators that interaction with the Web site had been launched (The Highlighter, 1998).

What did we learn here? Reflecting on the teacher workshop experience, we affirmed our belief that breaking the boundary of mental models can be fun, energizing, and supported by students working with teachers. We didn't set out to teach technical skills first and then application. Demonstration and coaching individuals through the technical aspects were used to match the teachers' preference for initiating their involvement. Having plenty of hands to assist was a big asset. Keeping the introduction simple and focused on indicating significant characteristics helped teachers understand possibilities for initiating their own learning about the Web site and jumpstarted their involvement. Our challenge then became our next steps. We found ourselves stymied by the lack of equipment access at the Hampton Elementary School site. Limited equipment was available in the Design Lab but not at the Education site. We knew that this lack of access was a tremendous boundary. We took a while to figure out a way to break through it. Part of the time lag was because other demands of university and school life drew our attention. Another part had to do with our hope that details would be worked out and necessary infrastructure and equipment at both sites would fall in place. When this did not happen, we began to create another alternative.

Our alternative consisted of creating a time and using the space at the Liberal Arts Design Lab for teachers to drop by and continue their learning (See Appendix VII). Members of the student design team would be on hand to continue our informal emphasis. We also initiated Hampton Elementary student workshops (See Appendix VIII). This part of our alternative was created to begin to develop

a student group who would replicate the model of the university student design team. Initial response has been enthusiastic. One particularly encouraging outcome has been unintended. Some of the parents have expressed an interest in accompanying their children. We believe we have begun to break that boundary of parental involvement expressed by our school colleagues. Access to helping hands and equipment, as limited as it is, and an invitation to come are the keys to opening the door for learning. We have begun to create a type of Computer Clubhouse (Resnick & Rusk, 1996). Our immediate challenge is one of building the momentum of this alternative. As soon as infrastructure and equipment are in place, we face the challenge of switching gears to those sites. It is our hope that, by that time, a core of teachers and students at Hampton Elementary and of teacher education students will take over as mentors on-site. These mentors will act as resource persons and implement the developmental model in the Tools for the Mind design (See Appendix III).

Response

> "Give me any class in any city. Give me the lowest-achieving students, those who have done poorly. Tell me nothing about those students, not even what they're studying, and I can go into that classroom and connect with those children."
> ---Marva Collins & C. Tamarkin Marvin Collin's Way

As we embark on the next millennium, educators may find it difficult to connect with their constituents - the students of tomorrow. For educators, the connection may mean that we interpret subcultures which impact on the intellectual structures of our students. Knowledge of subculture trends may garner future opportunities for the teacher to connect to the student in the learning paradigm. The connection that Marva Collins expresses is fundamental in her personal commitment to bridging the gap between her role as an educator to students with whom she interacts. Selecting innovative paths of connection, may provide new possibilities for educators as they create student learning opportunities. Innovative learning modules may be viewed in terms of electronic technological advancements which have surfaced within the educational arena.

In contemplating the challenges placed before me as a graduate and a student teacher, making the connection would mean utilizing recent academic experience and technological advancements of Web page development design. What did my particular academic experiences mean in relationship to the student; and how could I transfer these learning experiences into classroom structures in order to connect students to the learning processes. This would prove a catalyst to impending questions or inquiry. Upon entering my Student Teaching assignment, strands of knowledge stemming from my academic studies at the University of Detroit Mercy were paramount. I wanted to connect with my students by testing the theory of reading and writing as well as creating a thirst for new technological advancements. As a graduate student, I was taught the theory that reading and writing extended to every content area in teaching. More importantly, I was taught the importance of activating student schemata prior to engaging in the learning activity as possible techniques to bridge student learning. This particular technique held a reservoir of opportunities for me as a student teacher. However, the experience learned from participating in the Web page design, although somewhat ambiguous to the

learning structure proved a useful resource in my teaching repertoire.

During my student teaching experience, the importance of seeking out innovative pedagogy techniques as tools to assist the objectives of teaching and learning surfaced. As a history major, it was necessary to acquire pedagogical concepts that would transform the world of the past, in order to create relevant and meaningful understanding of our present. This concept of utilizing historical data obtained through reading and writing would be the foundation of each lesson design. As I entered the classroom environment I did not fully understand how the Web page design could assist me in this endeavor. I immediately discovered however, that the use of computer technology could assist me in making the study of the past, an innovative adventure for students. My lesson planning, for example, did utilize principles I learned in designing Web pages.

One teaching technique incorporated into my student teaching practicum dealt with the concept of schemata. As students generally do not automatically activate schemata, the goal as a teacher is to plan to assist the learner by connecting their background knowledge to the text. In recalling the Hampton Web Page Design, the curriculum links were surrounded by the belief that visual media graphics could activate student schemata by recalling existing knowledge related to a specific subject or text structure and connecting it to the content being read. This thought guided my practicum experience because it reinforced the organization of material and the importance of identifying graphics to clarify and illustrate concepts. Concept examples that were thought provoking media pictures, guided the learner with the text and facilitated the learning objectives.

Another ingenious idea was to utilize computer technology to supplement historical themes covered in the textbook. Just as relevant Internet links had been developed for the Hampton Web Page Design, the same technique could be employed during the student teaching experience. By allowing the Internet to act as a supplemental historical resource, students could at their disposal view examples of information to augment the textbook. Moreover, resources found would prove to be exciting reading material for students to connect with the past. I found that my experience with Web page design had an impact on how I thought about learning. I would challenge all of us to continue the inquiry toward understanding how technology changes the way we think.

Frequently, it is necessary to assume the traditional role of teaching in order to inculcate basic knowledge and skills. At other times, teachers must transfer the responsibility for learning to students and lead them as they construct meaning on their own. During my student teaching experience, when introducing supplemental information to the lesson design, students were told of the search engines used to surface the material. As the semester progressed, students developed the skill of searching and discovering supplemental material from the Internet as learning and reading resource tools. This simple concept provided a bevy of possible teaching ideas to be considered in the delivery of the instructional material. This simple concept had another benefit, as it motivated students regarding the subject matter and promoted the reading concept. The most important benefit was that students were searching for information and interacting with the text as active readers and active learners. I would challenge us to continue to address this dilemma of how to build basic skills and knowledge for all students. To do this, we must search for ways to use technology as a tool for guiding students to

construct meaning on their own.

Finally, the theory that would assist in connecting with students stems from the Web page design that dealt with the philosophical theory of technology in the classroom. Although an urgency to incorporate technology into the classroom was an ideological goal, realistic resources and lack of technological support made it virtually impossible to do so adequately. The student teaching placement was housed in an inner-city high school, characterized by the limitations which plague many urban schools. Antiquated computers, old infrastructure, scarce technological resources were all limitations. This prevented acquisition of Internet resources and student technology exposure during the school day. Although many students had computers at home, they did not use the Internet. They only utilized them to research material through CD software, to prepare reports using word processing software, and to engage in game software packages. As a student teacher, I discovered that limited computer resources and planning time would make it virtually impossible to employ great technological advances. Creating a paradoxical shift in the traditional teacher role is challenging when the infrastructure does not support the notion. Recognizing the need to prepare students to meet the challenges of the computer superhighway of information was a necessity. However, developing in-class computer technology opportunities proved difficult. Utilizing Internet technology required that students create independent learning structures outside of the classroom. The boundary of classroom and school walls was broken. This alternative made it possible for some students to share their works with others.

In assisting students to create independent learning structures, educators also bear the responsibility to foster imagination and creativity. It is a responsibility that calls for the skills of constructivist teaching on the part of teachers. I saw that need played out in my classroom. Searching for uses of Web page designs which provided students an opportunity to practice reading and writing was challenging. Like the Web page design for Hampton, students needed to practice reading and writing. The challenge, however, was how to incorporate the writing feature into the lesson design. Students would often use information found from software packages to write reports but found it difficult to use retrieved resources as spring boards for independent writing activities. Students would rather copy the material found than construct their own thoughts and ideas regarding the material. For many students, the superhighway of information is merely a store house of preprinted material ready to be copied to meet writing assignment requirements. During my student teaching experience, several students did use the Internet as a tool to develop creative writing material. We need to refine and develop the way we teach use of tools of electronic technology to emphasize writing as a way of thinking and creating.

During my student teaching experience, I soon realized that the reluctance to use technology in the classroom is due in part to the time and effort that is needed for implementation. Lack of educational orientation to technological possibilities makes it challenging for teachers to incorporate technology in their classrooms. Student and teacher subcultures particularly in the use and knowledge of computers, are different. Students generally are not intimidated by new technology. As members of a generation heavily influenced by technology, their existence has afforded them an opportunity to use more powerful technology than their teachers did. For this reason, teachers often times appear

to be reluctant to incorporate the possibilities of technology into the classroom. Discomfort with uncertainty seems to play a critical role in teacher implementation. My remembrance of the Hampton Web Page Design Workshop for staff recalled teacher fears. It became obvious that many teachers harbored phobias toward learning a new technology. To allay personal phobias associated with the uncertainty, meant articulating unfamiliarity with specific technology applications. Having a comfort zone to express possibilities and questions for incorporation was much needed. It was common for the Hampton workshop participants to be hesitant initially. Once obstacles of fear were addressed, and assurance of support implemented, comfort levels of participants increased. This provided confidence and a belief for Web page design success. We need to continue to search for ways to provide both a comfort zone and the challenge and support necessary for teachers to engage creative thoughts that lead to possibilities for student exploration with technology tools.

In reflecting on my student teaching experience, I was also hesitant initially to engage creative thoughts that could lead to possibilities for student exploration. I quickly learned that to reach today's youth on the Internet classroom court, meant incorporating innovative resources to connect the teacher to the student and the student to learning. Creative learning resources could take place outside of the classroom. They could take the form of computer search projects on the Internet as well as supplemental material found on the superhighway of information. What would have proved useful for me as a student teacher with limited technological resources was a computer learning lab during my student teaching experience. Instructional techniques for technology with students and teachers could be fostered. In reflection, my colleagues and I were left without an adequate tutorial arena to acquire technological skills and comfort. Thus, fear of the unknown compounded reluctance and changes did not develop. Changing the teacher-learner paradigm is a formidable task. Computer inhibitions may pose the greatest obstacles to those who seek educational innovation. It is fear and discomfort which may be the greatest deterrents for the use of educational technologies by students and teachers.

"He said, 'Come to the Edge.'
I said, 'I can't. I'm afraid.'
He said, 'Come to the Edge.'
I said, 'I can't. I'll fall off.'
He said finally, 'Come to the Edge.'
And I came to the Edge. And he pushed me. And I flew."
---Guillaume Apollinaire, (1880-1918)

Where Do We Go Next?

Next steps seem to indicate a need to create time and space for releasing our imagination (Greene, 1995). We need to take a breather from our reflection in action and move to reflection on action (Sergiovanni & Starratt, 1993). We are aware that the fast pace of our daily worlds of educational practice do not easily lend themselves to large blocks of time for this purpose. We have learned to catch those moments which resemble the sound bites of current media. Four Cities Network Conferences also have provided the Hampton Elementary-Education Department partners with a time

and space away from the daily swirl of activities. We have articulated some questions for inquiry. Other questions are just now taking shape.

Questions and insights already articulated are as follows:

Cross-Perspective/Thematic Questions

- How can we develop our skills and those of our students to use technology to construct knowledge which develops meaning?

- How can we learn to use the potentials of Web page design to stimulate creative, imaginative thinking?

- How can we begin to identify, articulate, and understand the ways Web design technologies are transforming the way we create and communicate?

Insights

- We know that Web page design is a powerful arena to engage many of Gardner's identified multiple intelligences (MI) (Gardner, 1983). We wonder if the current insights which MI theory have given also create blinders to the flip side of this valuable coin. Can Web page design lead to the identification of new forms of intelligence?

- Currently, Web page design has been used to develop consistency in presentation and focused attention of selected resource areas and data. While this approach is helpful in making sense out of the geometric proliferation of data, it also stymies the serendipity which leads to discoveries and the sheer joy of finding what has not been sought. (Crick, 1988; Gup, 1997).

- Our current vocabulary remains inadequate to develop a language capable of describing our experiences with interface design. In this fusion of art and technology lies our biggest challenge of all. This challenge is one which can enable us to use information-space as the symbolic springboard for shaping a new culture. Just as the mathematical and optical innovations of the Renaissance were best realized in the geometry of perspective painting, the industrial age worked through its social crises in the triple decker novels; the discovery of information-space likewise may engender a similar creative imagination--one capable of addressing the challenge of the social transformation which now embroils us (Johnson, 1997).

Education Perspective Questions

- How can we integrate the various disciplines of cognitive research, teaching-learning theory, and digital literacy into our teacher education work?

- Do we really understand what digital literacy is and the role of the teacher in it?

- How can we be moral leaders in the quest to use electronic technologies and particularly Web page design in the education arena of schools?

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Insights

- All theories must contribute not only to answers for our questions but also to the stimulation of new questions. If theories are not used in this fashion, we run the risk of using people as objects to be acted upon in a predetermined manner. We lose sight of the creative possibilities inherent in human interaction. Can Web page design be a resource to focus on the possibilities and use our experience wisely because we know we are constantly on the verge of new discoveries?

- Teaching is different from facilitating. It is also different from talking. If teaching were the same as talking, think how smart we'd all be (Hunter, 1980). We need to use electronic technologies and particularly Web page design as the tools that they are. Tools need a skilled hand to use them effectively. A hand which through the combinations of touch, power, and intuitive thought uses its capabilities to create what has been imagined. Teaching requires a sense of timing and understanding of the intimate relationship between content and learner not only to plan but also to continuously monitor and adjust interaction toward learning. It requires decision-making skills analogous to surfing and a professional conception of teaching practice for experiences to be educative (Dewey, 1938). Inquiry which leads to understanding of digital literacy and the role of the teacher will certainly have to include considerations of cultural relevance as well as cultural conflicts of language teaching and learning within classrooms (Delpit, 1995). To be effective in using electronic technology tools, we must accept the challenge to evaluate our efforts from such a holistic perspective. Existing tools, such as the National Study of School Educator's (NSSE) Technology: Indicators of Quality Information Systems in K-12 Schools, offer guidelines and formats for systemic evaluation (Carlson, 1997). How can we use these existing resources or create new ones which will develop our understanding of what it really takes, from a holistic perspective, to be effective in our use of technology as Tools for the Mind?

- There is a creative tension needed to both embrace electronic technologies and be healthy skeptics of its potential benefits (Greene, 1985). Policy is made using a variety of models and non-models which may or may not draw upon effective conceptualizations of the social skills systems which policy is intended to guide (Downey, 1988). Policy makers can and are influenced by what is popular and politically convenient. Current educational policy calls for the uncritical acceptance of electronic technologies for every student in every school. Where is the healthy sense of skepticism, the dialectical inquiry required to make effective policy? (Nelson, Carlson, & Palonsky, 1996). Moral leadership requires us to develop a sense of values according to a sense of what it means to be a human being. As such, it recognizes moral actions as taking place in a context of limits: limitations of understanding, of maturity, of virtue, of power (Sergiovanni & Starratt, 1993). We struggle, for example, with our knowledge that our students need to learn social skills, how to personally interact with people who are different from themselves, how to prepare to succeed in a world of possibilities which can and are curtailed by violence, power struggles, racism, classism, and sexism (Educational Policy, 1997). How can electronic technologies, particularly Web page design, assist and hinder our struggle to be moral leaders in the interface culture?

English Perspective Questions

• How can students simultaneously learn the discourse of particular disciplines while critiquing those same forms of expression? I am perplexed by claims that schools "transmit" the culture. Aren't we "always-already" in culture? Who can argue that there is a stance outside of "culture" that makes such a goal at all possible? Isn't it more productive to articulate the paradox of being-created-by-culture-while-critiquing-that- same-culture?

• What are the relationships between the "learning-by-doing" of the student web designer and the "learning-by-using-an-interactive-site" of other students? Would not the collaboration required for creating an interactive web site be in itself a means to critiquing the histories, arts, sciences, and other disciplines of contemporary life? Doesn't the creation of such "sites" offer an experience that better reveals how disciplines construct knowledge? Aren't there specific design strategies that demand exactly such a simultaneous performance and critique?

• What range of technological skills is necessary to an education based in creation and critique? What techniques of information design are based in sound epistemologies?

Insights

• Genuine learning requires two processes: 1) the design and creation of publicly viewed/read objects that embody specific knowledge, and 2) the critique of the created objects. We do better in the classroom when it is devoted to information design - to knowledge as emergent from cultural processes -- rather than seeing the classroom as a place where "natural" orders of information are transmitted from authorities through teachers to students. This latter strategy reflects a discredited epistemology.

• The critique and analysis of created objects forestalls the tendency of knowledge to be totalizing, fascistic, and static. Critique affirms the importance of discourse communities, and the social nature of such communities works paradoxically with the inventiveness of narrative to motivate activity.

• Narrative, not naturalization. Discourse communities, not essentialism. Emergence, not transcendence. Information design, not cultural caretaking.

School Perspective Questions

• How can our students use electronic technologies particularly Web page design to learn how to read and write?

• How can we use what we already know, address multiple and diverse expectations, learn the new curriculum resources for each content area, reimagine our teaching with electronic technologies and keep our sanity at the same time?

• How can we break down the barrier of student expectations that the teacher has to tell us how to use this technology and use student-to-student interaction to develop fluency with

electronic technologies?

Insights

• The traditional teaching of reading often consists of letter identification, phonetic analysis, word recognition and comprehension. English grammar, spelling, and word meaning seem to go hand-in-hand with the traditional writing strategies. They begin with sentence structure, grammar usage, and lead to the writing of paragraphs on teacher selected topics.

The use of technologies can lead to a more student-focused reading and writing mode of skill acquisition. The missing factors in many reading and writing strategies, students interest, and teaching for understanding are immediately evident. The need for students to listen, follow directions, work in small planning groups, use oral, written skills along with visual and artistic skills to develop the Web page, makes the whole process reflect findings related to using multiple intelligence strategies, to be successful with students who learn in different ways.

The vocabulary needed to develop the Web page is reinforced, the key board is a tangible means for learning letters. Spell check makes every student spelling wizards. Word comprehension and research, are built into the development of their dialogue. Perhaps the most important skill of general thinking activities are incorporated in every lesson.

• To attempt all of these critical components to improve student achievement takes educators, who are slightly insane. It takes a missionary zeal for the profession that goes beyond the school day. Educators and non-educators, parents, and students making a commitment to change, not just for the sake of change, but based on research driven results. We all must make a commitment to become life long learners, open to the possibilities that we now do, can be done better and what we now know can be expanded. We owe this to ourselves as professionals and to the children who have been entrusted to us to prepare for their futures and ours.

• Teachers, first, must have staff development that trains them in how to interact Socratically with students, and also teaches the usage of equipment, that is available in their classrooms daily, in order for student interaction to take place. HOTS, Higher Order Thinking Skills is such a program and many of our staff have been trained to use its teaching strategies and computer software, along with what many consider the most underused technology in American education-conversation with students.

Student Perspective Questions

• How do educators begin to address interdisciplinary differences in such a way that works to strengthen collaborative processes?

• How do economically disadvantaged schools and educators cope with lack of resources?

• How do educators use exciting forms of technology in a way which caters to the interests of the student, while at the same time works to challenge and motivate them for continued learning?

Insights

• The Hampton project was not necessarily a philanthropic venture between the English and Education Departments of the University of Detroit Mercy. The Departments entered the Hampton project with very specific questions of which they sought answers. Of course, those questions were not all the same. The Education Department asked questions about teaching-learning theory, about technological education, about digital literacy, and about the role of colleges in educating teachers about such concepts. The English Department asked questions about literary theory, about the dependency of text on its reader, and about the ideology of Web site and Internet technologies. Because of the apparent disparity of these questions, the methods of implementation of the Hampton project would prove to be just as varied. Yet, the collaboration between the two departments was a success. Its success was obviously a matter of understanding--at least the understanding of the disciplinary sources of such questions, if not the reasoning behind them. Compromise is not the vital component of successful collaboration--*understanding* is. Only through the understanding of the direction of individual disciplines, can collaboration be beneficial--that is, when the collaborative effort answers the questions of all involved disciplines and the questions which those disciplines form together.

A model is set for myself, as a dual major and future teacher-collaborator in how to best use the resources and methods of one discipline to provide and enhance opportunities for student learning. But, how does that process begin? What is the impetus for breaking that boundary of interdisciplinary collaboration...?

• The resources which were used in the collaborative project with Hampton Elementary School were the property of the University of Detroit Mercy. Hampton did not have access to the kind of technology in their school which would have made the project possible. It is a dilemma which many school systems face, and which calls for ingenious ways to get around it. That circumstance highlights the role that *access* has on the variety of learning resources and methods which can be used. But the role of *access* is not one which is commonly questioned and worked around. Too often, educators feel trapped into existing modes of teaching and learning processes, because they have limited resources in their schools and classrooms. But the resources for education, are not contained by the barriers of a classroom wall, nor are they imprisoned by walls of a school building . Instead, resources for education can be found in many places. They can be found in outside institutions, educational organizations -many places provide resources which educators can use. In this case, Hampton Elementary School found them at a local university. So then how does one go about finding such resources? How much emphasis does that put on the teacher/educator to be ingenious, resourceful and diligent in searching for necessary educational tools...?

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• As the students from Hampton come to use the Internet at the University of Detroit Mercy, they want to see very specific things. They want to see the Web sites that deal with their favorite singers, favorite toys, or favorite hobbies. As a future educator, it is my desire for the students to be interested in different things. I want them to be interested in Web sites that have interesting poetry, or fun science projects, or amazing people in history. I want them to come into the lab and ask to see a Web site about Martin Luther King Jr.; however, they want to see a Web site about the Spice Girls.

As the Internet technology offers them the choice of both, how do I begin to allow them to view the things which interest them, while at the same time curbing their attention to things which are important for their education? Although it may seem like a perplexing question, it is one which all educators contend--whether they are aware of it or not. The overwhelming question is how to make educational information interesting. Educators who integrate technology into their classroom, are faced with the challenge which has always been that of teachers--making learning fun. Just as teachers adapt general information into interesting formats for learning, so the Internet can be used as a tool for the same kind of adaptation. Using technology, demands that the educator be creative in the ways in which they use the information presented. It doesn't matter if it is distributed in text form, or over a computer screen, the methodology at its root level is the same.

But, with all the information on the Internet, how do I select Web sites which will be interesting *and* easily adaptable to the classroom...?

How Will We Get There?

We will get there by dreaming with a moral imagination to create equity of access to knowledge, learning, and technology for all students, by continuing to break boundaries which constrict our growth, by challenging and supporting each other to take the roads less traveled by and to come to the edge, by connecting with our students and challenges to chart new courses into unknown tomorrows.

To you ...

... All you who are dreamers, too,
Help me make our world anew
I reach out my hands to you.
---Langston Hughes

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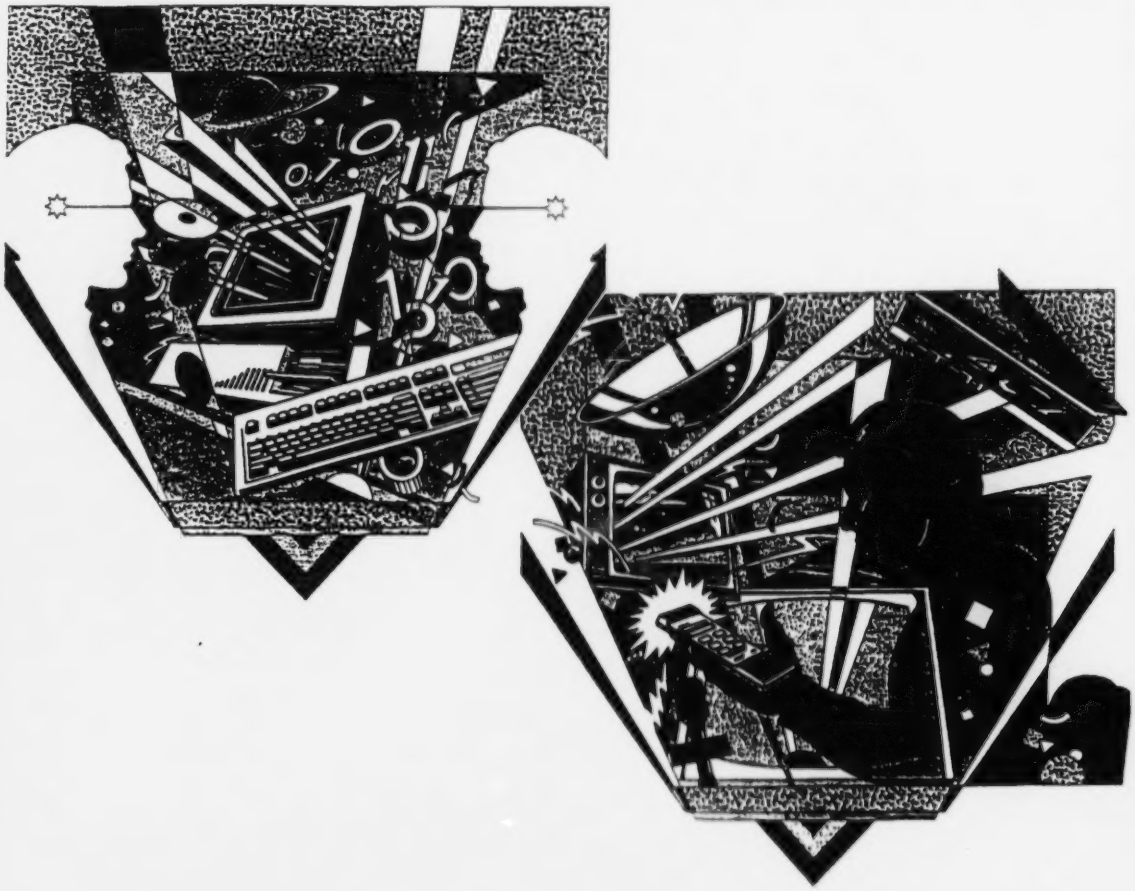
Tools for the Mind

—Supporting Mindwork with Technology

——A JOYCE FOUNDATION GRANT PROJECT



A PARTNERSHIP OF
THE UNIVERSITY OF DETROIT MERCY
AND
HAMPTON ELEMENTARY SCHOOL

Appendix III

STRATEGIC PLAN (K-16)
FOR
TOOLS FOR THE MIND: SUPPORTING MINDWORK WITH TECHNOLOGY

Goals and Objectives

Goal

- **Create technology-rich learning environments** that support students and teachers in City of Detroit Schools along with their colleagues at UDM by providing access to a variety of technology, both current tools in electronic forms, and new tools.

Objectives

- Equip both institutions with a critical mass of task-specific tools, including telecommunication links between the schools to create an infrastructure for ready access by teachers and students.
- Reconstruct educational settings by creating new learning environments in which the standard ways of using time, space, tools, and teaching strategies are replaced by arrangements that support active involvement in learning by students and instructors.
- View instruction as a product of a creative process--not as one that begins with textbooks and telling at the center and other activities viewed as nonessential.

Goal

- **Enable students and teachers** to use tools that support mindwork, are specific for the job, readily accessible, and easy to use by providing awareness, exposure, and training opportunities.

Objectives

- Provide instructors with a wide variety of ongoing learning experiences which develop skills in using technology in the classroom.
- Increase instructors' competent and confident use of technology in the teaching and learning process.
- Expand the use of technology by instructors and students beyond information retrieval tasks to include a multitude of cognitive and imaginative tasks.

Goal

- **Set in motion a developmental model** for applying technology to the tasks of teaching and learning by providing access that informs and guides the use of technology in teaching and learning.

Objectives

- Establish a three-year development Program based on an instructional strategies model that will integrate technology into teaching and learning.
- Provide guidelines for an instructional decision-making process.
- Provide support so that instructors can act as resource persons within school and university settings.

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Strategies

- ***Curriculum Focus:***

  Link curriculum, the central element of all schools, to the four other elements which comprise the structure for all that takes place within schools - purpose, organizational structure, instruction with evaluation, use of time and space--to maximize the opportunity for successful curricular change.

- ***Asset Based:***

  Focus on qualities participants already possess by identifying assets in order to clarify the components of our foundation and develop a powerful model to view ultimate goals in light of current strengths.

- ***Capacity Building:***

  Build the capacity of instructors to make and implement instructional decisions that are useful as technology and the educational environment continue to change.

- ***Unifying:***

  Unite people, instructors, and students (K-16) in their efforts to integrate the various initiatives present in schools and universities by a focus on processes related to instructional decision-making--the knowledge and skills which apply to all our work of teaching and learning.

- ***Inquiry Initiated:***

  Initiate action research through an inquiry approach which facilitates the questioning, testing reflective nature of systemic change.

- ***Authentic Assessment:***

  Engage in real-life assessment to inform the integration of technology into the teaching-learning process for continuous improvement of instructional decision-making.

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INITIATING INQUIRY FOR MODEL DEVELOPMENT

Model development in the TOOLS FOR THE MIND project utilizes the dynamic environment of urban K-16 schools to build capacity of participants to use a curriculum focus based on assets. There are two key characteristics of the development model. These characteristics generate the last two strategies of the Project Strategic Plan and are as follows:

1 ***Inquiry-based reflective practice***

An inquiring approach facilitates the questioning, testing, reflecting nature of systemic change. The central question which initiated the project was used as a starting point.

Central Question: What tools are needed to teach effectively?

Focus on critical tasks of teaching and learning in urban schools.

- How can a particular instructional outcome be most effectively addressed by instructors?
- What tools are required, by both instructors and students, to meet specific instructional needs?
- What media, methods, and materials will help instructors teach and students learn?

Integrate technology into teaching and learning by addressing the practical, control, and belief elements necessary for effective instructional decisions.

- How do I use technology (establish comfort using equipment)?
- What can technology do (understand capabilities of hardware and software)?
- How will technology help our students reach our goal (link capabilities to learning goals and student needs)?

2 ***Continuous, authentic assessment of the decision-making within the "curriculum-first" approach.***

Two factors must be dynamically coordinated to address the issue of equity of access. These factors are availability of tools and the sound knowledge and skill base to use these tools to promote student learning within urban school settings. Authentic assessment will ensure that these factors are actually being dynamically coordinated in real-life classroom teaching and learning.

Instructors and students must be value-driven, wise consumers of technology. They must:

- Clarify their vision and goals for technology's role in the curriculum.
- Use a systemic approach which coordinates action toward a common goal.
- Determine the critical mass of technology needed to have an influence on learning, and
- Develop a healthy skepticism of the potential uses of technology, as well as a realistic assessment of its advantages and limitations.

By using an inquiry process coupled with authentic assessment to engage the challenge to be value-driven, wise consumers, participants in the TOOLS FOR THE MIND project will create the leverage to shorten the existing gap of accessability to technology by urban schools and influence student learning. Thus, participants can inform policy with the "bottom-up" approach advocated in the project design. What and how of implementation at the local level can provide indicators as guidelines for policy development and implementation at local, state, and national levels.

Hampton School Web Site

Purpose of Web Site

- **community** - A website which allows students, parents, teachers and administration to see what is going on with the school, make known their views as well as the views of others helps build community.
- **connection** - Provides a connection to other students and teachers all over the world via the Internet, as well as a means of research.
- **equity** - Helps to build a technological base which brings Hampton students closer in awareness and knowledge to students who have more computer equipment and more Internet experience.
- **self-esteem** - Students will enjoy seeing their own work on line, as well as enjoying that feeling of accomplishment that comes from creating. Parents will be proud.
- **school spirit** - Hampton students, teachers and parents alike will feel pride in their school.
- **learning** - Students will be improving their writing skills with E-mail pen-pals and submissions to the query, as well as in creating web sites themselves. They will also be heightening abstract, associative learning and thinking skills.

Audience

The targeted audience of the Hampton website will be students. The site is also for teachers, administrators, parents, the community, and the world.

Content Ideas

Query - "speak your mind," an exchange of comments between students, teachers, administrators, parents, the community, etc.

Tour - tour of the school with photos and descriptions.

Student corner - student bulletin board to display student work (a good positive reinforcement tool), pen-pals in other parts of the U.S. and other countries, student websites, creative writing by children such as a "Never ending Story" to which the students continue to add.

Monthly events calendar - displays field trips, science fairs, etc.

Faculty and staff corner - teacher home pages, E-mail addresses, homework listings, etc.

Principal's corner - mission of school, special projects/programs, message from principal.

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Appendix V

Cool Sites for Teachers/Curriculum/Kids --Hampton Web Site

Alphabet Superhighway
(http://www.ash.undl.edu)

Bellingham, WA Public Schools
(http://www.bham.wednet.edu/)

Best of the Net
(http://www.thekids.com/)

Ed Web: Exploring Technology and School Reform
(http://ed.web.cnidr.org/resource.cntnts.html)

From Now On.Org: The Educational Technology Journal
(mckenzie.fromnowon.org)

Houghton Mifflin Interactive Network
(http://www.hmco.com/)

Kid Link
(http://www.kidlink.org/english/index.html)

Kids
(http://www.gov.nb.ca/hotlist/kids.html)

Kid's Club Directory
(http://www.gov.nb.a/hotlist/kids.htm)

NickNacks Telecollaborate!
(http://www.minn.net/~schnbert/nicknacks.html)

Research Investigations Using WWW
(http://wwwbir.bham.wednet.edu/Hinshaw/Student Investigations/sistart.html)

San Jose Education Network Curriculum Projects Index
(http://www.sjen.org/esuhsd/curir/currindx.html)

Special Sites for Kids
(http://gil.ipswichcity.gld.gov.au/eetint.1a.html)

Village Cafe: KIDLINK Curriculum and Resources
(www.kidlink.org/english/index.html)

WELCOME TO HAMPTON!

Themes | Student Corner | Faculty Corner | Our Principal | Calendar of Events | Tour Our School

Send Email to hampton@libarts.udmercy.edu

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Grade	Themes	Grade	Themes
Kindergarten	All About Me Color Is Everywhere Just for Fun Family Time In the Barnyard Nighttime Let's Be Friends Playful Pets I Can Do Anything Here Come the Bears Going Places Tell Me A Story	Grade 1	Off We Go--See What We Know! Growing and Changing The World Outside My Door Get the Giggles Sharing Time Creepy Crawlies Unexpected Guests Big and Little Family Treasures Something Fishy
Grade 2	Be A Nature Detective Good Friends Family Photos That's Incredible! Tell Me a Tale	Grade 3	Oink, Oink, Oink Community Ties Disaster! What's Cooking? Wheather Watch What a Day!
Grade 4	It's Cool. It's School. Earth Patrol Super Sleuths American Snapshots Meet the Challenge Could It Really Happen?	Grade 5	Journey to Adventure! In the Wild Try to See It My Way Catastrophe! From the Prairie to the Sea Do You *Believe* This???
Grade 6	Survival! In Search of the Real Me Unwrapping Ancient Mysteries Imagination at Work Finding Common Ground Ocean Quest		

Themes | Student Corner | Faculty Corner | Our Principal | Calendar of Events | Tour Our School

WELCOME TO HAMPTON!

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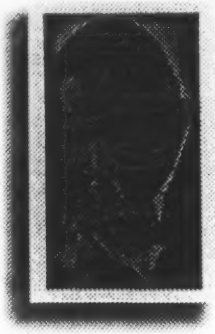
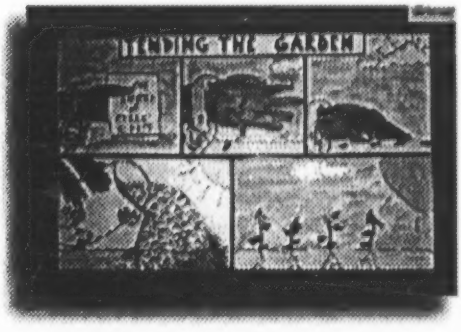
Meet the Challenge



"An individual has not started living until he can rise above the narrow confines of his individualistic concerns to the broader concerns of all humanity." Martin Luther King, Jr. (1929 - 1968)



"I am proud to say that I am also 'tending the garden.' I am doing my part by getting a good education, listening to my teachers and my parents, being drug-free, and remembering to treat people as I want to be treated. I hope that others will do the same.

Even though the struggles along the way made planting very difficult, the "seeds" of the Civil Rights Movement did sprout. Today they continue growing and sprouting beautiful green leaves. Many people have tried to destroy the garden. Some have tried to pull it out by its roots, but the roots are strong and healthy. As long as there are always people "tending the garden," it cannot--and will not--be destroyed!!"

Darien Buskin, Grade 5
Honorable Mention, Seventh Annual Art/Essay Contest
"What the Civil Rights Struggle Means to Me"

Related Links

My Hero Home Page
National Civil Rights Museum
African American History, Savannah Georgia

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Tools For The Mind

Supporting Mindwork With Technology

Curriculum and Technology

HTTP://libarts.udmercy.edu/~hampton/

Hugh Culik
Nina Jett
Joslen Letscher
Cassandra Phillips

with

The UDM Design Group

Purpose: Make the Web Your Ally

Process: Join with us to create the HES Website which is:

- *Student centered
- *Curriculum based

Explore possible applications

- *Kids work(writing, art)
- *Research strategies for kids
- *Teacher and student resources for curriculum mindwork

Develop ways to collaborate

UDM students type stories, update information, link curriculum sites
HES students write to other students
HES teachers confer with other teachers

Payoff: Kids involved with world wide resources
Simplify teacher planning time
Increase time on task for student learning

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